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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/071,099 | 02/11/2002 | Jai Young Woo | SEC.936 | 1563 |

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| EXAMINER | |
|---|---|
| NGUYEN, THONG Q | |
| ART UNIT | PAPER NUMBER |
| 2872 | |

DATE MAILED: 03/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/071,099 | WOO ET AL. | |
| | Examiner | Art Unit | |
| | Thong Q. Nguyen | 2872 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *07 January 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-4,6-14 and 16-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4, 6-14, 16-17 and 20-21* is/are rejected.

7)☒ Claim(s) *18 and 19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/7/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Amendment*

1. The present Office action is made in response to the amendment filed on 1/7/2004 in which applicant has added new claims 18-21 into the application. The pending claims 1-4, 6-14 and 16-21 are examined in this Office action. Claims 5 and 15 were canceled by applicant in the amendment filed on 7/14/2003.

### *Claim Rejections - 35 USC § 103*

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-3, 9-11, 13 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holmes et al (U.S. Patent No. 4,627,009) in view of Kawashima (U.S. Patent No. 5,955,739) and Staehle (U.S. Patent No. 4,277,133) (all of record).

Holms et al disclose a computerized stage assembly supporting a wafer. The stage as described in columns 2-4 and shown in figures 1-6 comprises a wafer supporting element, a first mechanism for moving the wafer supporting element in a x-direction, a second mechanism for moving the wafer supporting element in a Y-direction perpendicular to the x-direction, a third mechanism for moving the wafer supporting element in a z-direction perpendicular to the plane defined by x and y direction, a fourth mechanism for rotating an tilting the wafer supporting element in any desired position., and a computerized control system for controllable operating the movements of the stage. Holms et al also disclose that 1) the image of the wafer can be displayed in a display system (columns 1 and 5

and fig. 6); 2) each of the mechanism comprises a stepping motor for providing the power/operation of the mechanism (columns 3-4); and 3) the tilting angle and speed of tilting operation can be controlled by the user (columns 4-6). As such the computerized stage assembly provided by Holms et al meets the features recited in the claims except the feature relating to the use of optical unit for observation and stoppers for alignment the wafer on a support.

It is noted that the use of a microscope having an optical unit for viewing/observing a wafer which is located in a movable stage in three direction and also in a tilted manner in clearly known to one skilled in the art as can be seen in the microscope provided by Kawashima. See columns 5 for the details relating to the movable stage and columns 14-16 and fig. 14 for the microscope having an optical unit comprises at least one objective lens system (100) and eyepiece system (98) for observation. Thus, it would have been obvious to one skilled in the art at the time the invention was made to utilize the computerized stage assembly provided by Holms et al in a microscope having an optical unit as provided by Kawashima for the purpose of providing a means for observation of the wafer located in the movable stage.

Regard to the use of two stoppers at a radius distance of a round portion of the wafer from a central pivot of the wafer as recited in claim 1 and for alignment the wafer as recited in claim 9, it is noted that the use of a stop device having two legs for keeping a slide from falling and simultaneously providing a means for alignment the slide under the field of view of an observation is known to one

skilled in the art as can be seen in the microscope provided by Staehle. See columns 3-4 and fig. 1. One skilled in the art will recognize that (s)he will arrange the stop device (34, 36) for maintaining the slide (32) on the platform (28) having two curved legs (34) in a suitable position so that the legs will circle the central pivot point of the wafer on the system of Holms et al. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the combined product provided by Holms et al and Kawashima by using a stop device for circling the wafer as suggested by Staehle for the purpose of alignment the wafer.

4. Claims 7-8 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holmes et al in view of Kawashima and Staehle as applied to claims 1 and 9 above, and further in view of Schram (U.S. Patent No. 4,938,654, of record).

The combined product as provided by Holms et al and Kawashima as described above does not clearly disclose that the wafer is secured to the wafer supporting element via a vacuum chuck and a motor for generating power to the vacuum chuck; however, the use of vacuum pressure for holding a wafer is known to one skilled in the art as can be seen in the system provided by Schram. In particular, Schram teaches the use of vacuum chuck for holding a wafer by vacuum pressure. In regard to the use of a motor for generating power to operate a vacuum chuck, such use is well known to one skilled in the art as an inherent feature from the mechanism for operation in the art of Schram. Thus, it would have been obvious to one skilled in the art at time the invention was made to

modify the combined product provided by Holmes et al and Kawashima by using vacuum chuck and mechanism having at leas tone motor for generating power to the vacuum chuck suggested by Schram for the purpose of securing the wafer to its support element.

5. Claims 4, 6 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holms et al in view of Kawashima and Staehle as applied to claims 1 and 9 above, and further in view of An (U.S. Patent No. 5,852,300, of record).

The combined product as provided by Holmes et al and Kawashima as described above does not disclose the use of detecting elements for detecting the presence of the wafer on its support element; however, the use of detecting elements with the movable stage for detecting a flat region/area of a wafer and thus the presence of the wafer is a wafer inspection system is known in the art as can be seen in the system provided by An. See columns 2 and 5. Thus, it would have been obvious to one skilled in the art at time the invention was made to modify the system provided by Holmes et al and Kawashima by using detecting elements as suggested by An for the purpose of detecting the flat zone of a wafer and inherently the presence of the wafer on a support element for the purpose of inspecting the wafer.

6. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nomura et al (U.S. patent No. 4,948,330) in view of Kawashima (U.S. Patent No. 5,955,739) (both of record).

Nomura et al disclose an alignment system for alignment/position a reticle or mask in an optical system having a stage supporting the reticle or mask and means for operating the stage in x, y, and z directions and in a rotation about direction perpendicular to the plane defined by x and y directions and also in a tilting direction. The system as described by Nomura et al in columns 2-4 and the control system for controlling the operation of the stage in columns 6-7 comprises a stage (11) for supporting a reticle (14), a stage moving system having a x-stage (7) and its driving components, a y-stage (5) and its driving components, a z-stage 915) and its driving components and the mechanism for rotating and tilting the stage (11). Regarding to the wafer stoppers as recited in claim 21, it is noted that the stage (11) supporting the reticle (14) comprises four openings (11b) disposed around the stage in opposite sides of the center point of the stage for the purpose of alignment/holding the reticle. As such the controlled stage assembly provided by Nomura et al meets the features recited in the claims except the feature relating to the use of optical unit for observation.

It is noted that the use of a microscope having an optical unit for viewing/observing a wafer which is located in a movable stage in three direction and also in a tilted manner in clearly known to one skilled in the art as can be seen in the microscope provided by Kawashima. See columns 5 for the details relating to the movable stage and columns 14-16 and fig. 14 for the microscope having an optical unit comprises at least one objective lens system (100) and eyepiece system (98) for observation. Thus, it would have been obvious to one

skilled in the art at the time the invention was made to utilize the controlled stage assembly provided by Nomura et al in a microscope having an optical unit as provided by Kawashima for the purpose of providing a means for observation of the reticle located in the movable stage.

***Allowable Subject Matter***

7. Claims 18-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter:

Each of claims 18/1 and 19/9 is patentable with respect to the cited art by the limitations relating to the use of an air cylinder for moving the wafer forward and backward wherein the air cylinder is used in a system having a stage/platform holding a semiconductor wafer, at least one wafer stopper for aligning the wafer on the platform, rotating means for rotating the wafer to a desired tilt angle and a controller for adjusting the tilting angle.

***Response to Arguments***

9. Applicant's arguments filed on 1/7/2004 have been fully considered but they are not persuasive.

A) regarding to the rejection of claims 1-3, 9-11, 13 and 16-17 under 35 U.S.C. 103(a) as being unpatentable over Holmes et al in view of Kawashima and Staehle, applicant's arguments provided in the amendment, pages 6-7, have been fully

considered but they are not persuasive. Applicant has argued that the examiner fails to provide some citation to show the teaching in the prior art that would have motivated one of ordinary skill in the art to modify the teaching of Staehle in the system provided by Holmes and Kawashima. The Examiner respectfully disagrees with the applicant's viewpoint for the following reasons.

Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the stage system provided by Staehle comprises a stop

device (34, 36) for maintaining the slide (32) on the platform (28) having two curved legs (34) for the purpose of preventing the movement or the drop of the specimen from the stage. It is noted that the movement of the microscope with a rotatable frame will cause the specimen drop from the stage if the stop device is not being used. The stage provided by Holms is rotated and tilted so the specimen located on the stage is able to drop out from the stage. Thus, one skilled in the art with general knowledge will modify the system provided by Holms et al by using the stop device provided by Staehle for the purpose of preventing the movement or the drop of the specimen from the stage.

B) Regarding to the rejection of claims under 35 U.S.C. 103(a) as being unpatentable over Holms et al in view of Kawashima, Staehle and An, applicant's arguments provided in the amendment, pages 7-9, have been fully considered but they are not persuasive.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

The art of An is directed to the use of detecting elements for detecting the presence of the wafer on its support element. See columns 2 and 5. Thus, it would have been obvious to one skilled in the art at time the invention was made to modify the system provided by Holmes et al and Kawashima by using

detecting elements as suggested by An for the purpose of detecting the flat zone of a wafer and inherently the presence of the wafer on a support element for the purpose of inspecting the wafer.

C) Regarding to the rejections of the remaining claims as set forth in the previous office action, it is noted that since applicant has not provided any specific arguments, and thus, the rejection of those claims are maintained for the same reasons as set forth in the rejections.

***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thong Q. Nguyen whose telephone number is (571) 272-2316. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A. Dunn can be reached on (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thong Q. Nguyen
Primary Examiner
Art Unit 2872

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